

We claim:

1. A synthetic polymeric cell-matrix structure comprising a fibrous matrix having sufficient interstitial spacing between fibers to allow tissue ingrowth after implantation of the matrix in an animal, wherein the matrix is formed of a biocompatible, biodegradable synthetic polymer, and

fibrous tissue or blood vessels growing into the matrix.

2. The cell-matrix structure of claim 1 formed into a tube.

3. The cell-matrix structure of claim 1 formed into a valve.

4. The cell-matrix structure of claim 3 formed into a heart valve.

5. The cell-matrix structure of claim 1 further comprising dissociated parenchymal or connective tissue cells.

6. A method for making a cell-matrix construct comprising implanting into an animal at a first site a fibrous matrix having sufficient interstitial spacing between fibers to allow tissue ingrowth after implantation of the matrix, wherein the matrix is formed of a biocompatible, biodegradable synthetic polymer,

removing the implanted matrix after a period of time sufficient to allow ingrowth of fibrous tissue or blood vessels into the matrix, and

implanting into an animal or human the matrix at a second site where the resulting cell-construct is needed.

7. The method of claim 6 further comprising seeding the matrix with dissociated parenchymal or connective tissue cells.

8. The method of claim 7 wherein the matrix is seeded after removal of the matrix having ingrown tissue or blood vessels.

9. The method of claim 7 wherein the matrix is seeded prior to implantation of the fibrous matrix at the first site.

10. The method of claim 6 wherein the cell-matrix construct is implanted to form a valve.

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- 6 11. The method of claim 10 wherein the valve is a heart valve.
- 7 12. The method of claim 10 wherein the cell-matrix construct is seeded with endothelial cells and implanted to form a blood vessel.
13. A porous polymeric matrix seeded with dissociated cells to form a heart valve.
14. The matrix of claim 13 formed of a polymer selected from the group consisting of poly(lactic acid), poly(glycolic acid), and combinations thereof.
15. The matrix of claim 14 formed of polymer fibers having an interstitial spacing of between 100 and 300 microns.
16. The matrix of claim 14 seeded with dissociated cells selected from the group consisting of fibroblasts, myofibroblasts, and endothelial cells.